

MANIPAL UNIVERSITY

**FRIST YEAR MASLP / MOT / MSc. MLT / MSc. RT / MSc. ECHOCARDIOGRAPHY /
OPTOMETRY / MSc. MIT / MSc. RRT & DT DEGREE EXAMINATION – JUNE 2017**

**SUBJECT: STATISTICS & RESEARCH METHODS / ADVANCED BIOSTATISTICS & RESEARCH
METHODOLOGY / BIOSTATISTICS / ADVANCED BIOSTATISTICS & RESEARCH
METHODOLOGY / PAPER IV: EPIDEMIOLOGY & BIOSTATISTICS / PAPER IV: RESEARCH
METHODOLOGY & BIOSTATISTICS / BIOSTATISTICS/ ADVANCED BIOSTATISTICS &
RESEARCH METHODOLOGY**

Friday, June 02, 2017

Time: 10:00 – 13:00 Hrs.

Max. Marks: 80

1. **Define the following:**

- 1A. Any three measures of central tendency
- 1B. Qualitative and quantitative variables with examples
- 1C. Sampling errors and non-sampling errors
- 1D. Sampling frame, probability sampling and non-probability sampling

(3+2+2+3 = 10 marks)

- 2A. Write the properties of normal distribution. List any two applications of normal distribution.
- 2B. The mean rate of adenosine triphosphate among a sample of 30 insulin resistant children was found to be 6 $\mu\text{mol/g}$ of muscle/min with standard deviation of 2 $\mu\text{mol/g}$ of muscle/min. Find the 95% and 99% confidence intervals for the mean rate of adenosine triphosphate for the study population.

(5+5 = 10 marks)

- 3A. Define type I error, type II error, level of significance and power of a statistical test of significance.
- 3B. Hypothermia is a problem for extremely low birth weight infants. A study was conducted to investigate whether wrapping these infants in polyethylene bags in the delivery room and while they are being transferred to the neonatal intensive care unit affects the survival of babies. The results of the study conducted among 140 extreme low birth weight babies are given in the following table:

Warming treatment	Number of infants		Total
	Lived	dead	
Polyethylene bag	63	7	70
Traditional	61	9	70
Total	124	16	140

Test at 5% level of significance whether mortality among the extreme low birth weight infants is associated with the kind of warming treatment given. The table value for 5% level of significance is 3.84.

(4+6 = 10 marks)

4. Discuss independent sample t test and paired t test with an example.

(10 marks)

5. Explain case control study under the headings:

- i) design with the help of a flow chart
- ii) measure of strength of association
- iii) merits
- iv) demerits

(4+2+2+2 = 10 marks)

6A. Write a short note on randomization in clinical trials.

6B. A randomized controlled trial has been planned to compare the effects of low fat diet with the diet recommended by the American Diabetic Association. The outcome variable is the total cholesterol (in mg/dL). What is the minimum number of subjects required in each group to detect a difference in total cholesterol of 20 mg/dL between the two groups with 90% power and 5% level of significance? Based on the earlier experience the standard deviation of total cholesterol in the population is about 35 mg/dL. The table value for 90% power and 5% level of significance is 1.28 and 1.96 respectively.

(5+5 = 10 marks)

7. **Write short notes on:**

- 7A. Validity of diagnostic test
- 7B. Structure of research thesis
- 7C. Meta-analysis
- 7D. Logistic regression

(5 marks × 4 = 20 marks)



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MANIPAL UNIVERSITY

FIRST SEMESTER M.Sc. M.I.T. DEGREE EXAMINATION – JUNE 2017

SUBJECT: MIT 101: RADIOGRAPHIC PROCEDURES
(2015 SCHEME)

Thursday, June 15, 2017

Time: 10:00 – 13:00 Hrs.

Maximum Marks: 80

✍ **Answer ALL the questions.**

✍ **Major question:**

1. Write a note on anatomy of female reproductive organ. Explain the radiological procedure for demonstration of unilateral/bilateral cornual block.

(20 marks)

2A. List the cranium bones. Explain the radiographic projections to demonstrate jugular foramina.

2B. Explain the Lauenstein's radiographic projections.

2C. Write a note on dental radiography with dental formulae. Add a note on Bisecting angle technique.

2D. Explain in details the modification of urogram.

2E. Define BIRADS. Explain the standard view taken for mammography.

2F. Explain the radiographic procedure for demonstration of small bowels. Add a note on Peroral Pneumocolon.

(10 marks × 6 = 60 marks)



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MANIPAL UNIVERSITY

FIRST SEMESTER M.Sc. M.I.T. DEGREE EXAMINATION – JUNE 2017

SUBJECT: MIT 102: INSTRUMENTATION OF CONVENTIONAL AND SPECIALIZED
RADIOLOGY EQUIPMENT'S

(2015 SCHEME)

Saturday, June 17, 2017

Time: 10:00 – 13:00 Hrs.

Maximum Marks: 80

✍ Answer ALL the questions.

✍ Major question:

1. What is rectification? Explain in detail types of rectification with diagrams and their uses.

(20 marks)

2. Write short notes on:

2A. Earthing

2B. Main voltage compensation

2C. Filament circuit

2D. Mobile image intensifier

2E. Safety rules for radiographers

2F. Spot film devices

(10 marks × 6 = 60 marks)

